

# Yes, We are Losing Beach

## But there are ways to fight the rising tide

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CLIPPER REPORTER

An engineer from the environmental consulting firm Woods Hole Group told a crowded audience at the Senior Center on April 12 that the tide is indeed rising, all over Duxbury Beach. From 1853 to 2015, erosion amounted to between 1 to 2 feet per year, coastal engineer Kirk Bosma told the crowd of about 75. More recently, the rates have increased to about 3 to 4 feet per year, though those rates vary across the beach.

"We are losing feet of shoreline all across the beach and erosion is accelerating at the bottom of the barrier beach," Bosma said as he presented the findings of Falmouth-based Woods Hole Group. The international environmental and engineering

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consultants were contracted by the Town of Duxbury in conjunction with Duxbury Beach Reservation, via a grant from the Massachusetts Department of Coastal Zone Management. The purpose of the study, which started in 2015, is to determine what erosion has occurred and what can be done to bolster the beach and address vulnerable areas.

Bosma said that while the seaward side of the barrier beach has been eroding for some time, "the back side of the barrier beach has been historically neutral. But it is also showing increased contemporary erosion." One notable exception to erosion along Duxbury Beach is the reservation parking lot, the coastal engineer told the crowd. "It is obvious there that great efforts have been made to maintain against erosion."

Can the process of rising tides be countered by our efforts, one audience member asked. "Can you fight Mother Nature?" Bosma echoed the question. "The answer is yes and no. Ultimately, no. There's going to be a time, 75 to 100 years from now, that you are not going to be able to win, but there are things you can do to bolster the shoreline and prevent as much erosion as possible."

What can be done? Beach nourishment - which means taking sand from elsewhere (in New Jersey sand is pumped from offshore to shoreline to counter erosion), dune restoration, building berms, vegetation and marsh restoration. "A wider beach can reduce storm damage to coastal structures by dissipating energy across the surf zone," the coastal engineer noted.

Asked by an audience member "if Duxbury could mimic the New Jersey beach communities that take sand from offshore and dump it onto shoreline to bolster the beach," Bosma said that Massachusetts had not used that method of beach preservation, but the reason for the state not adopting this procedure yet had been due to concern about fish populations offshore. There are other methods to nourish a beach, though. "The sand can come from other sources as well (upland quarries, navigational channels, other beaches, etc.)," Bosma said.

Where would the money come for such a project? "I think there is an opportunity for multiple "pilot" type studies to be conducted in the state," Bosma said. "Currently, there is a Massachusetts Coastal Zone Management Grantfunded project in Sandwich, MA, evaluating the potential use of a borrow site to nourish the beach. Duxbury should definitely sign up to be one of those pilot projects." Woods Hole is conducting the Sandwich study. Keeping people and vehicles out of the dunes will help the beach be maintained as well, Bosma noted. Margaret



Kearney, president of the board of directors at Duxbury Beach Reservation, said that in the 1940s and 1950s, driving on the dunes had been permitted and it damaged the beach. "By the 1960s, it was recognized that this practice had to be stopped," she said, noting that it was the forerunner to Duxbury Beach Reservation, a group called Duxbury Beach Association, that forbid vehicles on the dunes. The association was formed in 1919 and purchased the beach. It evolved into Duxbury Beach Reservation Inc., in 1975, when the group became chartered as a non-profit corporation by the state. "That is why we have two entrances for people to drive on the beach, they drive in a defined corridor and park perpendicular to the dunes," Kearney said. "Most of the beach is habitat and most of it is restricted from vehicles."



**Erosion is happening at Duxbury Beach.**

File photo

What are some particularly vulnerable areas on Duxbury Beach to deal with if a powerful storm were to roll in? Bosma pointed to an area that many who use the drive-on beach would know well for having stronger tides than most of the beach - a spot between the first and second crossovers. "This area gets more wave energy than most of the beach," he said. "This is an area that would be the most vulnerable on the beach for a big Nor' Easter (storm that heads up Northeast coast)."



Last year, Woods Hole Group set up several stations around Duxbury Beach and marsh areas to quantify how much the tides are changing and just how much beach we are losing. The study should be complete in June. Kearney said another meeting will be scheduled to go over the final report and "figure out how to address the things we need to do and find money for them."

**Pre-1971: shoreline change rates in feet per year of the southern extent of Duxbury Beach. Negative values indicate erosion, while positive values indicate accretion. Rates are presented every 5th transect for display purposes.**